THAT WHICH IS CLAIMED IS:

1. A pressure-measuring vessel system for microwave assisted chemical processes, said vessel system comprising:

a pressure resistant vessel that is otherwise transparent to microwave radiation;

a pressure-resistant closure for the mouth of said vessel, portions of said closure including a pressure resistant synthetic membrane;

a pressure transducer external to said vessel; and

a tube extending from said transducer, through said membrane and into said vessel for permitting the pressure inside said vessel to be applied against said transducer while said closure and membrane otherwise maintain the pressure resistant characteristics of said vessel.

2. A vessel system according to Claim 1 wherein said closure comprises a metal perimeter for gripping said vessel at said mouth; and wherein said membrane comprises the center portion of said closure surrounded by said metal perimeter.

3. A vessel system according to Claim 2 wherein said metal perimeter is clamped to said mouth of said vessel.

4. A vessel system according to Claim 1 wherein said membrane comprises butyl rubber.

5. A vessel system according to Claim 1 wherein said membrane comprises a siloxane polymer.

6. A vessel system according to Claim 1 wherein said tube comprises a needle.

7. A vessel system according to Claim 1 that is formed of glass.

8. A vessel system according to Claim 1 and further comprising:

means for securing said membrane and said closure against pressure developed in said vessel during a chemical reaction.

9. A pressure measurement assembly comprising:

a pressure-resistant vessel that is transparent to microwave radiation

a closure for said vessel;

a pressure transducer external to said vessel and said closure;

a needle for extending from said transducer, through said closure and into said vessel, and for providing pressure communication between the interior of said vessel and said transducer; and

a collet for engaging and maintaining said transducer, said needle, said closure and said vessel in linear relationship so that the pressure in said vessel is transmitted to said transducer while said vessel is in use.

10. A pressure measurement assembly according to Claim 9 wherein said vessel comprises a cylinder and said closure comprises a cap for said vessel.

11. A pressure measurement assembly according to Claim 10 wherein said collet engages said vessel and said closure by exerting a radial force inwardly against said cylindrical vessel and an axial force linearly against said cap.

12. A pressure measurement vessel according to Claim 9 wherein said closure comprises a penetrable septum for receiving said needle therethrough while maintaining a pressure seal to said vessel.

13. A pressure measurement vessel according to Claim 12 wherein said closure comprises a metal perimeter for gripping said vessel at said mouth; and wherein said septum comprises the center portion of said closure surrounded by said metal perimeter.

14. A pressure measurement vessel according to Claim 12 wherein said septum is formed of a material selected from the group consisting of butyl rubber and siloxane polymers.

15. A pressure measurement vessel according to Claim 13 and further comprising means for securing said septum against pressure in said vessel.

16. A pressure measurement vessel according to Claim 15 wherein said collet includes means for urging said septum towards said vessel while concurrently urging said vessel towards aid transducer.

17. A vessel system for microwave assisted chemistry comprising:

a pressure resistant reaction vessel formed of a microwave transparent material;

said vessel having a cylindrical portion defined by concentric inner and outer walls that terminates in a cylindrical opening;

an annular rim extending outwardly from the circumference of said cylindrical opening, and defining a rim circumference concentric with said cylindrical portion and said cylindrical opening;

a pressure resistant fitting for said reaction vessel and fixed to said rim; and

said vessel having a curved outer wall portion between said concentric outer wall and said rim circumference.

18. A vessel system according to Claim 17 wherein said pressure resistant fitting includes an annular metal portion clamped to said rim.

19. A vessel system according to Claim 18 wherein said pressure resistant fitting includes a penetrable septum.

20. A vessel system according to Claim 17 wherein said pressure resistant fitting comprises a removable collet that engages said vessel and said rim.

21. A vessel system according to Claim 17 wherein said reaction vessel is formed of glass.